Design & Developing an Educational Growth Mindset Game

An Exploration of the Project Management Process

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Introduction

The goal of this project is to create an educational video game which will teach elementary school students the importance of having a growth mindset in order to thrive in their academic careers, as well as in other aspects of their lives. The game will approach the topic on two fronts: (1) to teach the students what a growth mindset is and how to cultivate it and (2) to help students internalize activities and thought patterns which would help a growth mindset become almost second nature as a result of continuous game play. The game must be fun, while also delivering on its educational goals.

I will be acting in the role as the Project Manager for the design and development of the growth mindset game. As such, it will be my responsibility to acquire and manage the necessary resources, including human resources.

Resources

My team will consist of several video game designers, video game developers, graphic artists, sound professionals, Instructional Designers, and Educational and Motivational Consultants. See Appendix B for an infographic featuring Key Performance Indicators for each team.

In addition, we will need one license per developer for Construct 3, the game authoring system we will be using to create the game. Designers will each need a license for the full Adobe Photoshop Creative Suite.

Project Plan

We will be using a scrum-like process which will run in two-week sprints. A retrospective will be held at the end of each two-week sprint in order to thoroughly examine what went right, what went wrong, and how to better approach similar challenges in the future. See Appendix C for the project schedule.

Scope Creep

Changes will be categorized based on the potential impact they will have on existing programming. Change requests will be made using the form in Appendix D.

Impact Statement
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Most video game designers and developers are visual thinkers. With this in mind, I aimed to innovate many mundane processes to make them more visually engaging.

One of the ways in which I accomplished this was to create a visual timeline of the different tasks and when they need to be completed. I also created an infographic job aid to help the designers and developers keep track of what comes next in the process of creating an educational video game.

See Appendix for charts and infographics detailing various ways I transformed our project management process.
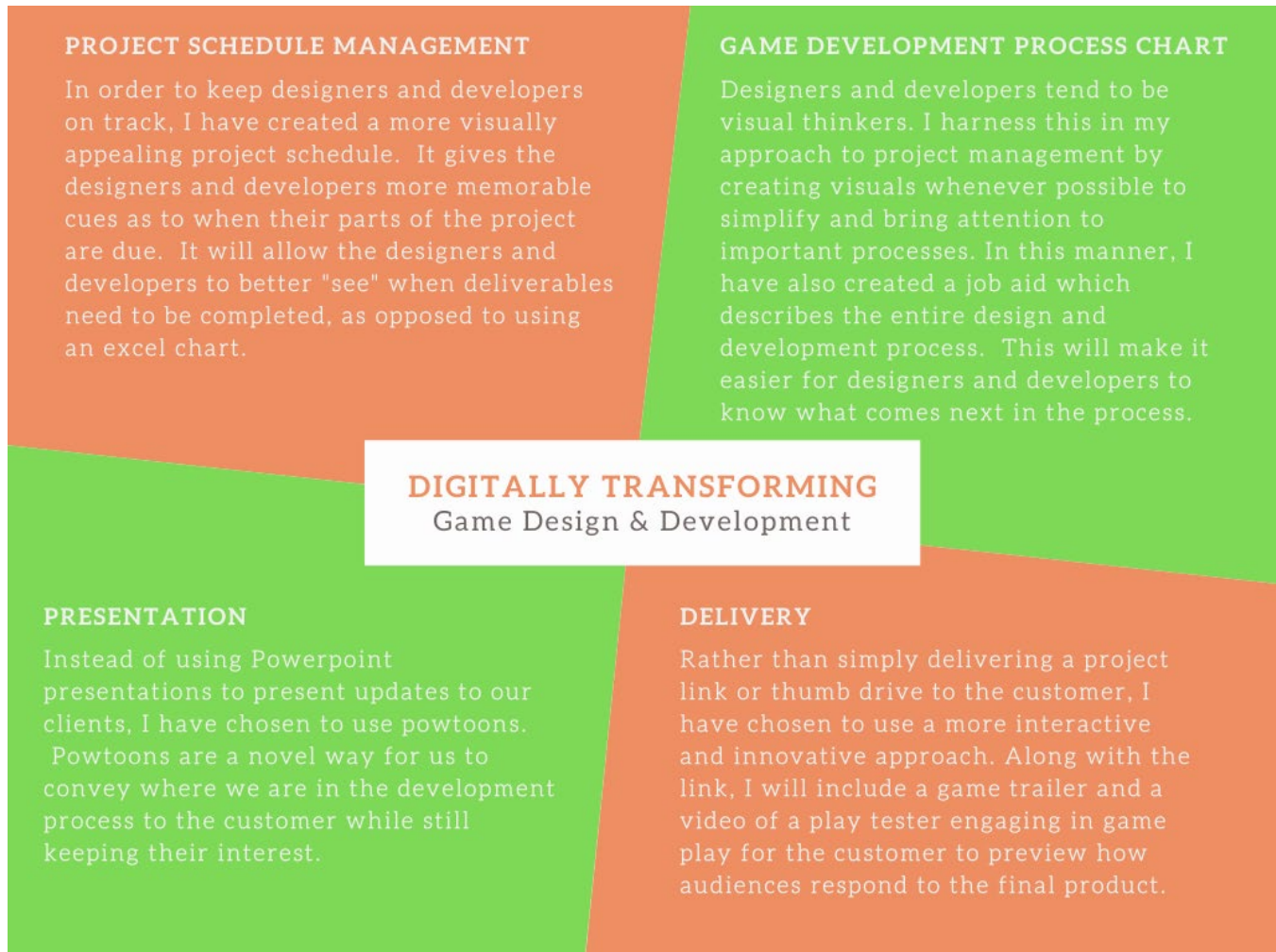
Storage

All artifacts will be stored in the cloud (most likely amazon web server) for documentation and future reference.

Post-Mortem Detailing

After closing the project, which will consist of delivering products to clients and making sure that artifacts are properly archived, I will lead a project post-mortem session where we will focus on the following questions:

(1) Did we deliver what was asked for on budget and on time?

(2) Did this project accomplish what it was created to accomplish? If not, why not?

(3) Were there challenges in the process which could be improved for the next project? If yes, what and how could these processes be improved?

(4) Are there tools that did not exist at the onset of the project which could be used to improve processes, communication, or delivery? What kind of training would be needed to implement those tools for future projects?

Appendix A: Transformation Chart

PROJECT SCHEDULE MANAGEMENT

In order to keep designers and developers on track, I have created a more visually appealing project schedule. It gives the designers and developers more memorable cues as to when their parts of the project are due. It will allow the designers and developers to better "see" when deliverables need to be completed, as opposed to using an excel chart.

GAME DEVELOPMENT PROCESS CHART

Designers and developers tend to be visual thinkers. I harness this in my approach to project management by creating visuals whenever possible to simplify and bring attention to important processes. In this manner, I have also created a job aid which describes the entire design and development process. This will make it easier for designers and developers to know what comes next in the process.

DIGITALLY TRANSFORMING
Game Design & Development

PRESENTATION

Instead of using Powerpoint presentations to present updates to our clients, I have chosen to use powtoons. Powtoons are a novel way for us to convey where we are in the development process to the customer while still keeping their interest.

DELIVERY

Rather than simply delivering a project link or thumb drive to the customer, I have chosen to use a more interactive and innovative approach. Along with the link, I will include a game trailer and a video of a play tester engaging in game play for the customer to preview how audiences respond to the final product.

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Appendix B: Key Performance Indicators

KEY PERFORMANCE INDICATORS
Growth Mindset 2D Platform Game

PROJECT MANAGER
- Communication between team members produces high quality deliverables under budget and on time
- Deliverables are within 90% of allotted budget

EDUCATIONAL CONSULTANT
- Players will increase their knowledge of what a growth mindset is and how it improves their quality of life, as measured by pre-game and post-game questionnaires.

MOTIVATIONAL CONSULTANT
- Players will be motivated to persist through challenging game play to complete levels and earn achievements.

GAME DESIGN & DEVELOPMENT
- Players will find the game controls easy to use
- Game play was easy to learn and did not distract from the main focus of the game
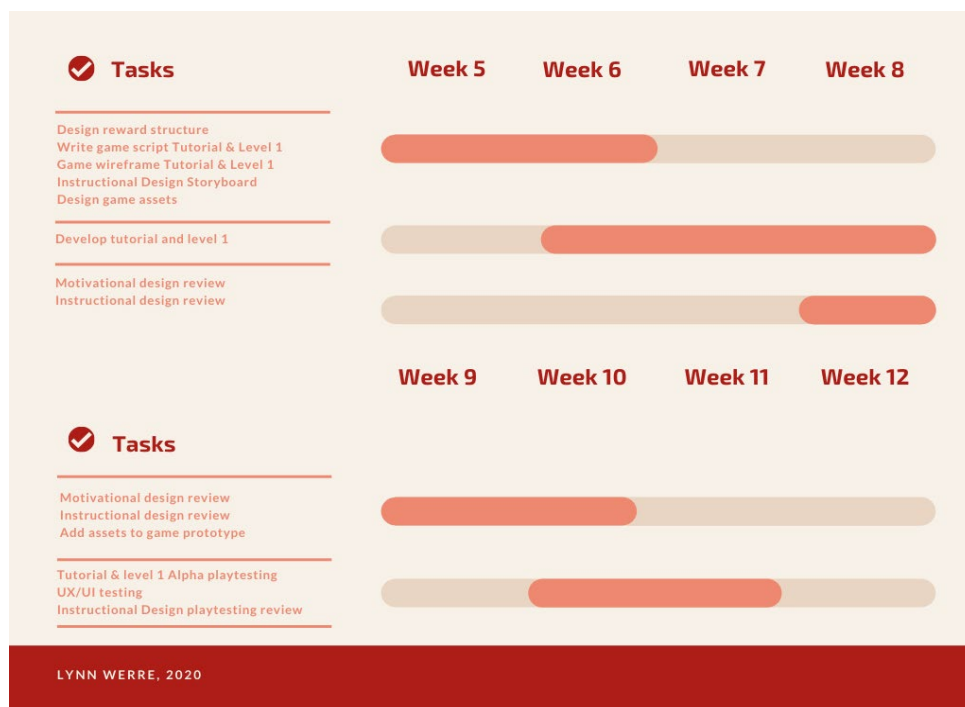- Players find the game visually appealing but not distracting

INSTRUCTIONAL DESIGNERS
- Ensures that game play challenges are instructionally sound
- Provides guidance on best practices for using Interactive Media

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Appendix C: Project Schedule

GROWTH MINDSET GAME

✔ Tasks	Week 1	Week 2	Week 3	Week 4
Project manager hires Educational Consultant, Motivational Consultant, and Instructional designer	████			
Instructional Designer hires Game Designer and Developers		████		
Game Designer and Developers hire playtesters			████	
Needs Analysis Motivational Analysis UX/UI Research				████
Design reward structure Write game script Tutorial & Level 1 Game wireframe Tutorial & Level 1 Instructional Design Storyboard				████

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✔ Tasks	Week 5	Week 6	Week 7	Week 8
Design reward structure Write game script Tutorial & Level 1 Game wireframe Tutorial & Level 1 Instructional Design Storyboard Design game assets	████			
Develop tutorial and level 1		████	████	
Motivational design review Instructional design review				████

	Week 9	Week 10	Week 11	Week 12
✔ Tasks				
Motivational design review Instructional design review Add assets to game prototype	████			
Tutorial & level 1 Alpha playtesting UX/UI testing Instructional Design playtesting review		████		

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✅ Tasks	Week 12	Week 13	Week 14	Week 15

Motivational design revisions
Instructional design revisions
Game design revisions

Game development revisions

Tutorial & level 1 Beta playtesting
UI/UX testing
Instructional design beta playtesting review

This concludes phase 1-3 of the project. Phase 4 will restart at week 5 with the creation of the 2 & 3rd game level development and continue through week 14, which will conclude in Beta testing.

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GROWTH MINDSET GAME PARAMETERS

Hours:

All project members will work a standard 40-hour work week, Monday through Friday, 9 am - 5 pm EST. They will receive paid time off on all Federal Holidays.

Responsibilities:
The team will work in two week sprints, to be led by the Project Manager. The Project Manager will also oversee coordination and scheduling across team members, and acquiring all licenses needed for the project.

The Educational Consultant will conduct needs analysis and resource reviews.

The Motivational consultant will conduct the motivational needs analysis and design the reward system and other motivational aspects of the game.

The Instructional Designer will work with both consultants and the game designer and developer to create instructionally sound exercises to be carried out in the game.

The Game Designer is responsible for creating and acquiring visual assets to be used in the game.

The Game Developer is responsible for the programming portion of the game.

RESOURCES	
HUMAN	**TOOLS**
Project Manager	Monday.com
Educational Consultant	Figma
Motivational Consultant	MS Word
Instructional Designer	Articulate 360
Game Designer	Adobe Photoshop
Game Developer	Construct 3

Appendix D: Change Management

Project Change Order   **Request**

Project name:

Requested by: **Date:**

Request name: **Request number:**

Change description:

Change reason:

Impact of change:

● **Scope**:

- **Budget**:
- **Timeline**:
- **Resourcing**:
- **Communications**:
- **Other**:

Proposed action:

Associated cost:

Approved by: **Date:**

DEVELOPING AN EDUCATIONAL VIDEO GAME

A PROCESS OVERVIEW

1 **DETERMINE LEARNING OBJECTIVE**

Stakeholder works with Educational Consultant to determine the game's learning objectives (LOs). Include LO for the overall game, as well as individual LOs for each level.

2 **AUDIENCE ANALYSIS**

Once the learning objectives are formalized, the Motivational Designer will work with the Game Designer, Game Developer, and Educational Consultant to develop the best system for motivating students to engage with the learning content.

3 **DESIGN REWARD/MOTIVATION SYSTEM**

Motivational Designer will work with the Game Designer, Game Developer, Educational Consultant, and Instructional Designer to develop the best system for motivating students to engage with the learning content.

4 **GAME DESIGN STORYBOARD**

Game Designer works with the Educational and Motivational Consultants to create the main characters, plot, setting, challenges, and level structures for the game.

5 **GAME DEVELOPMENT STORYBOARD**

Game Developer creates a wireframe of menu screens, character controls, level maps, in-game community building, and user interface analysis/solutions.

6 **CREATE ASSETS**

Game Designer creates visual assets for the game (character creation, setting). They also gather/create audio assets for the game (sound effects, music).

(Continued)

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DEVELOPING AN EDUCATIONAL VIDEO GAME

A PROCESS OVERVIEW CONTINUED

7 **PROTOTYPING**

Game Developer programs game mechanics, challenges, player movements, and reward structure to see if gameplay as designed is possible.

8 **PLAY TESTING**

Game Developer hires play testers to play test the first itiration of the first few levels of the game. perform User Experience (UX)/User Interface (UI) research.

9 **PRODUCTION**

Following play testing, the entire team comes back together to start putting the assets from Game Designer together with adjustments made as a result of the play testing. Educational, Motivational Consultants and Instructional Designer consults to ensure that LO's are clear and consise throughout gameplay.

10 **ALPHA TESTING**

Game is fully functional and ready for another round of play testing in its entirety.

11 **BETA TESTING**

Final play testing after adjustments from Alpha testing have been made.

12 **DEPLOY**

Game is deployed in its final form to consumers.

Source:

How Video Games Are Developed. Retrieved from https://www.cgspectrum.com/blog/game-development-process

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References:

Change Management Form retrieved from
https://docs.google.com/document/d/1ZyYFCWUHjdz9DWUrhCkcQupCTqKt3qKg5H39DWLy4wY/edit

Ewin, N., Luck, J., Chugh, R., & Jarvis, J. (2017). Rethinking project management education: a humanistic approach based on design thinking. *Procedia Computer Science*, *121*, 503-510.

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